Regency® COMMUNICATIONS, INC.

SERVICE MANUAL

UHF RECEIVER WITH COS
(CARRIER OPERATED SWITCH)

MODEL MA 335

1227 S. PATRICK DRIVE
SATELLITE BEACH FLA

0300-4221-400

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7-81

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SERVICE INSTRUCTIONS

REGENCY MA-335
UHF RECEIVER WITH
CARRIER OPERATED SWITCH

(COS)

I. GENERAL DESCRIPTION

The Regency MA-335 is an FM receiver with COS (Carrier Operated Switch) for use in the 450-512 MHz land mobile communication band. It is designed to be used with the RAP200 automatic telephone interconnect system allowing the system to comply with FCC Rules and Regulations Part 90.483. The MA-335 monitors the repeater transmit frequency for other co-channel stations. When other co-channel stations are present, the COS sends a signal to the RAP200 disabling the ring detect circuit. The MA-335 mounts in the MCCUR series repeaters with an adaptor plate.

II. CIRCUIT DESCRIPTION

The antenna is connected to a 2-section RF helical filter, L205 and L206, which acts as a preselector for incoming signals.

Q203 is a grounded gate, low noise, J-FET amplifier. Its output is fed through an additional 2-section helical filter, L212 and L213 and delivered to the gate of Q206, a J-FET mixer.

L.O. (Local Oscillator) injection for the J-FET mixer Q206 is a frequency of 10.7 MHz lower than the incoming signal frequency. It is obtained from a crystal oscillator-multiplier chain, consisting of Q201, Q202, and Q205. Q201 is a crystal oscillator, using a third overtone crystal in the 48.8 to 55.7 MHz range. The output circuit of Q201 oscillator is tuned to the third harmonic of the crystal frequency, and this harmonic is amplified by a buffer-amplifier consisting of Q202. Q202 drives Q205, which operates as a frequency tripler, providing the wanted local oscillator injection frequency. This wanted injection frequency is separated from various harmonics and subharmonics by the L215 and L216 section of the helical filter and delivered to the source of the mixer, Q206.

The output of Q206 consists of a 10.7 MHz IF signal which is fed to a six-pole monolithic crystal filter, consisting of XF201, XF202 and XF203. This filter provides most of the adjacent channel selectivity of the receiver. The signal is then amplified by Q207. The amplified 10.7 MHz IF signal is then coupled to IC201 (terminal 18) which contains the second mixer circuitry and the second L.O. circuitry operating at 10.245 MHz.

The 455 KHz output of IC201 (terminal 3) is coupled through a tuned circuit to the input of the ceramic filter, CF201. CF201 is a narrow-band filter centered at 455 Khz, and it provides additional adjacent channel rejection. The output of CF201 goes back to IC201 (terminal 5) where it is amplified approximately 60dB. Also included in IC103 is the limiting circuitry and a quadrature detector circuit. L123, connected between terminals 4 and 8 of IC201, is the adjustable quadrature coil.

The audio output from IC201 Pin 10 (AØ) is applied to the COS control. From the COR control the audio returns to the input of the COS circuit at Pin A1.

From Pin A1, the noise is filtered and then amplified by the internal squelch amplifier in IC201. The amplified noise is rectified by CR204 and CR207 and the DC voltage is applied to Pin 14 of IC201. From Pin 14 the voltage is applied to an internal squelch switch which pulls Pin 16 high with a receive signal. This high is applied to the base of Q401 and will cause it to conduct, switching K25, the COS output low.

No	GENERAL	NOMINAL	GUAR
1	CHANNELS	ONE	———
2	FREQ RANGE	450-512 MHz 2 BAND	———
3	OPERATING TEMP	-20°C TO +60°C	———
4	OPERATING DUTY CYCLE	CONTINUOUS DUTY	———
5	SIZE	2.95"x 7.55"	———
6	WEIGHT	6.35 OZ	———
7	POWER	13.6 VDC	———
	CURRENT DRAIN	@ 13.6 VDC	———
8	RCVR SQUELCH	50 MA	———
9	RCVR MAX. AUDIO	———	———
10	TRANSMIT	———	———
11	ANTENNA	50 Ω	———
12	CHANNEL SPACING	25 KHz	———

No	RECEIVER	NOMINAL	GUAR
	SENSITIVITY	———	———
13	20 DB Q	.4 µV	.5 µV (MAX)
14	12 DB SINAD	.3 µV	.35 µV (MAX)
	AUDIO SQ SENSITIVITY	———	———
15	THRESHOLD	———	———
16	TIGHT	———	———
17	CTCSS	———	———
18	ADJ.CH SEL 20DB	-120 dB	-100 dB (MIN)
19	ADJ. CH. DESEN 12DB	-83 dB	-80 dB (MIN)
20	OPERATING BANDWIDTH	±750 KHz FM.CTR	SEE 304-116
21	SPURIOUS & IMAGE	-85 dB	-80 dB (MIN)
22	IM 20 DB Q	———	-75 dB (MIN)
23	IM 12 DB SINAD	———	-75 dB (MIN)
24	MAB	±6.5 MHz	±7.5 MHz (MAX)
25	FREQ STAB TEMP.	———	±.001% (MAX)
26	FREQ STAB VOLTAGE	———	±.0001% (MAX)
27	AUDIO RESPONSE	———	———
28	AUDIO OUT PWR (MAX)	———	———

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	RELEASE R 546	4-7-81	RLS

NO	RECEIVER	NOMINAL	GUAR
29	AUDIO OUT PWR (MAX)	———	———
30	SQ BLOCKING	———	———
31	COS ATTACK TIME	———	100 MS (MAX)
32	COS CLOSING	———	150 MS (MAX)
33	HUM & NOISE RATIO	50dB/60dB (UNSQ/SQ)	45dB/55dB (UNSQ/SQ)
34	UNDESIRED CONDUCTED (AC)	———	———
35	UNDESIRED CONDUCTED (RF)	———	———
36	UNDESIRED RADIATED	———	FCC
37	HIGH HUMIDITY	———	———
38	VIBRATION STAB	———	———
39	SHOCK STAB	———	———

	TRANSMITTER	NOMINAL	GUAR
40	PWR OUTPUT		
41	DC PWR IN TO FINAL		
42	OUT FREQ STAB (TEMP)		

NO	TRANSMITTER	NOMINAL	GUAR
43	OUT FREQ STAB (VOLT)		
44	SPUR & HARM CONDUCTED		
45	SPUR & HARM RADIATED		
46	OPERATING BANDWIDTH		
47	EMISSION		
48	MODULATION		
49	AUDIO FREQ DISTORTION		
50	FM HUM & NOISE		
51	AM HUM & NOISE		
52	AUDIO FREQ RESPONSE		
53	TRANS CARRIER ATTACK		
54	SIDEBAND SPECTRUM		
55	HIGH HUMIDITY		
56	VIBRATION STABILITY		
57	SHOCK STABILITY		

			APPROVALS	DATE
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE FRACT DEC ANGLE ± .XX ± .XXX	DRAWN CMcC	4-3-81
			CHECKED	
			DPTG SUPV	
		MATERIAL	ENGR	4-7-81
	MCCUISRA,B	FINISH		
	MCCUOIRA,B			
NEXT ASSY	USED ON	DO NOT SCALE DWG.		
APPLICATION				

Regency COMMUNICATIONS INC. SATELLITE BEACH, FLORIDA 32937

SPECIFICATIONS
MA-335

SIZE B | PART NUMBER 304-321 | REV A

SCALE ——— | SHEET 1 OF 1

III. INSTALLATION

Mechanical mounting

1. Install provided adaptor plate as per Figure 1
2. Mount MA-335 on adaptor plate.
3. Mount supplied UG-1094/U connector on rear chassis of the repeater as per Figure 2.

Electrical connections

1. Connect +13.8 VDC (P1) and ground (G) connections to repeater control board.
2. Plug COS control wire (D25) into the control plug Pin 10 on rear chassis of the repeater.
3. Solder the RG 316 coax from the MA-335 to the UG-1094/U connector on rear chassis of the repeater.
4. Connect white wire C6 to C6 on repeater control board.

IV. ALIGNMENT PROCEDURE

A. Disconnect AØ wire from the control board of the repeater. Connect AØ from the MA-335 to AØ on the control board.

B. Monitor K11 with DC VTVM. Inject strong 10.700 MHz signal into the vicinity of L319 and Q207. Set K11 to 3.5 VDC by adjusting L220.

C. Monitor M8 with the DC VTVM. Adjust L204 for minimum voltage at M8. A voltage dip of 0.05V from the oscillator off to the oscillator on should be observed. A reading of 0.6 VDC indicates no drive to Q205.

D. Modulate signal generator with a 1 KHz tone at ±3 KHz deviation. Increase generator output for 6dB SINAD on sinadder.

E. Adjust L205, L206, L212, and L213 for best 12dB SINAD by constantly reducing the signal generator output for 12dB SINAD.

F. Adjust L215 and L216 for best 12dB SINAD.

G. Monitor K11 with DC VTVM. Adjust L201D to 3.5V.

H. Increase deviation to ±6 KHz. Adjust L218 and L219 for best 12dB SINAD.

I. Set the signal generator for a 1 KHz tone at ±3 KHz deviation. Adjust the generator output for 12dB SINAD. The generator should read no more than .35 uv.

J. Set the signal generator output to -130dBm. Monitor D27 with VTVM. Adjust the COS control R403 until D27 measures apx. 7.5 VDC increase the signal generator output until D27 measures 0 VDC. This is the threshold of the COS and the generator should read less than .25 uv.

K. Monitor K11 with DC VTVM set on 10V scale. Set signal generator for 100 uv and offset the frequency +3.0 KHz from the crystal frequency. Voltage at K11 should increase from 3.5 VDC on frequency to at least 4.5 VDC with +3.0 KHz offset.

(IV CONT'D)

Table of Performance Limits

PARAMETER	MIN	TYP	MAX	UNITS
M8	-	.5	.55	VDC
12dB SINAD	-	.3	.35	uv
20dBQ	-	.4	.5	uv
Threshold COS	-	.2	.25	uv
K11 +3 KHz offset	4.5	6.0	-	VAC

V. VOLTAGES

Voltage on active component MA-335

	With Drive			No Drive		
	E	B	C	E	B	C
Q201	2.2v	2.7v	8.2	2.2	2.9	8.2
Q202	3.2	3.7	8.2	3.3	4.2	8.2
Q205	.7	.54	8.2	0	.6	8.2
Q207	.2	.85	5.2	.2	.85	5.2
	S	G	D	S	G	D
Q203	1.2	0	7.8	1.2	0	7.8
Q206	.71	0	6.8	.64	0	6.8

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
IC201	8.0	7.6	7.7	8.2	1	1	1	8	4	3.4	4.1	2.2	2.2	0	7.6	7.5	0	2
COS off	8	7.6	7.7	8.0	1	1	1	8	4	3.4	4	2.2	2.2	.6	0	0		2

	1	2	3	4	5	6	7	8
IC203	7	5.5	5	0	4.0	4.0	2.8	8.2

K11 3.2

				COS on		
	E	B	C	E	B	C
Q401	0	0	6V	0	.65V	0

D27 COS on 0
COS off 6V

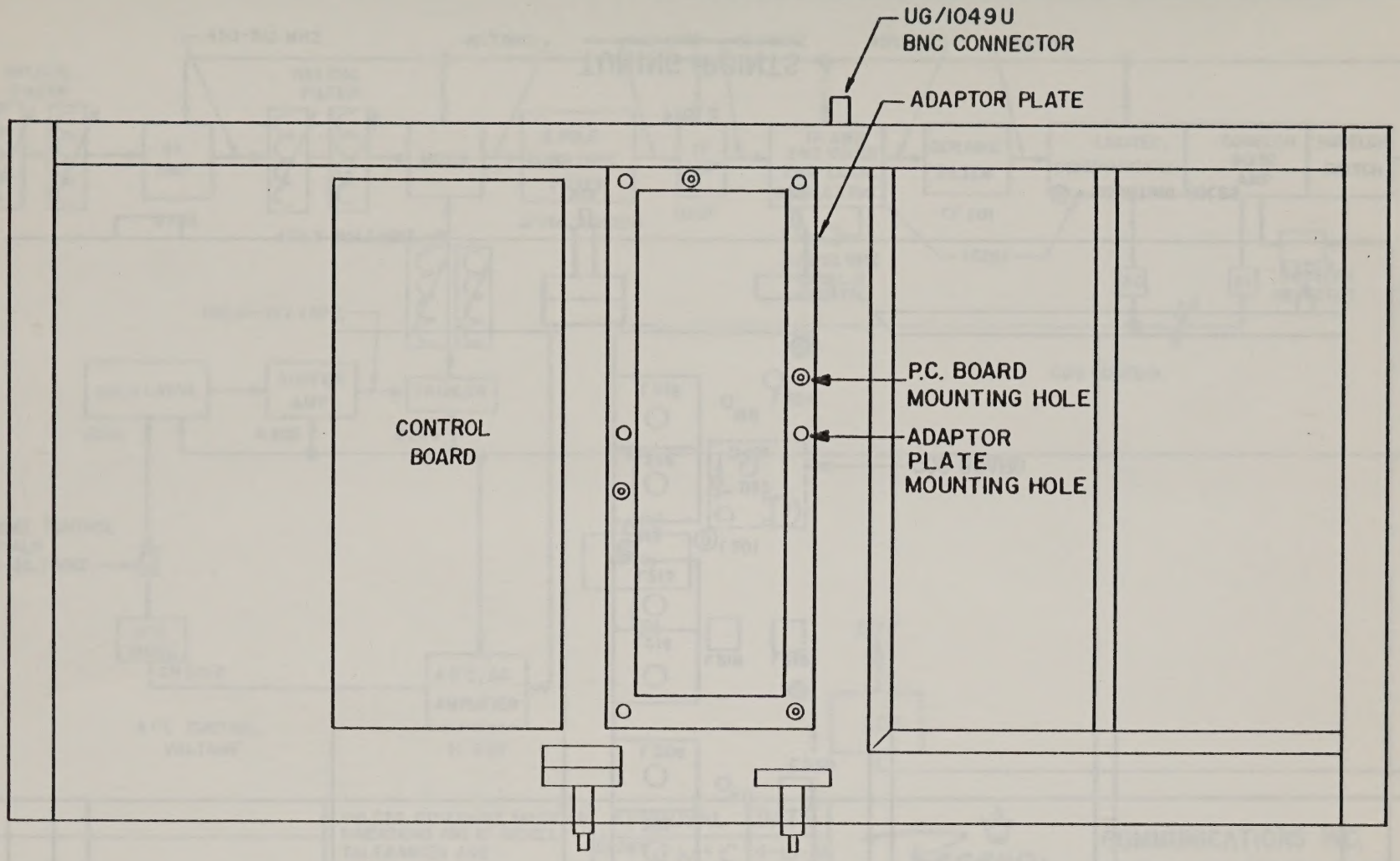

UG/1049U
BNC CONNECTOR
ADAPTOR PLATE
CONTROL
BOARD
P.C. BOARD
MOUNTING HOLE
ADAPTOR
PLATE
MOUNTING HOLE

FIG. 1

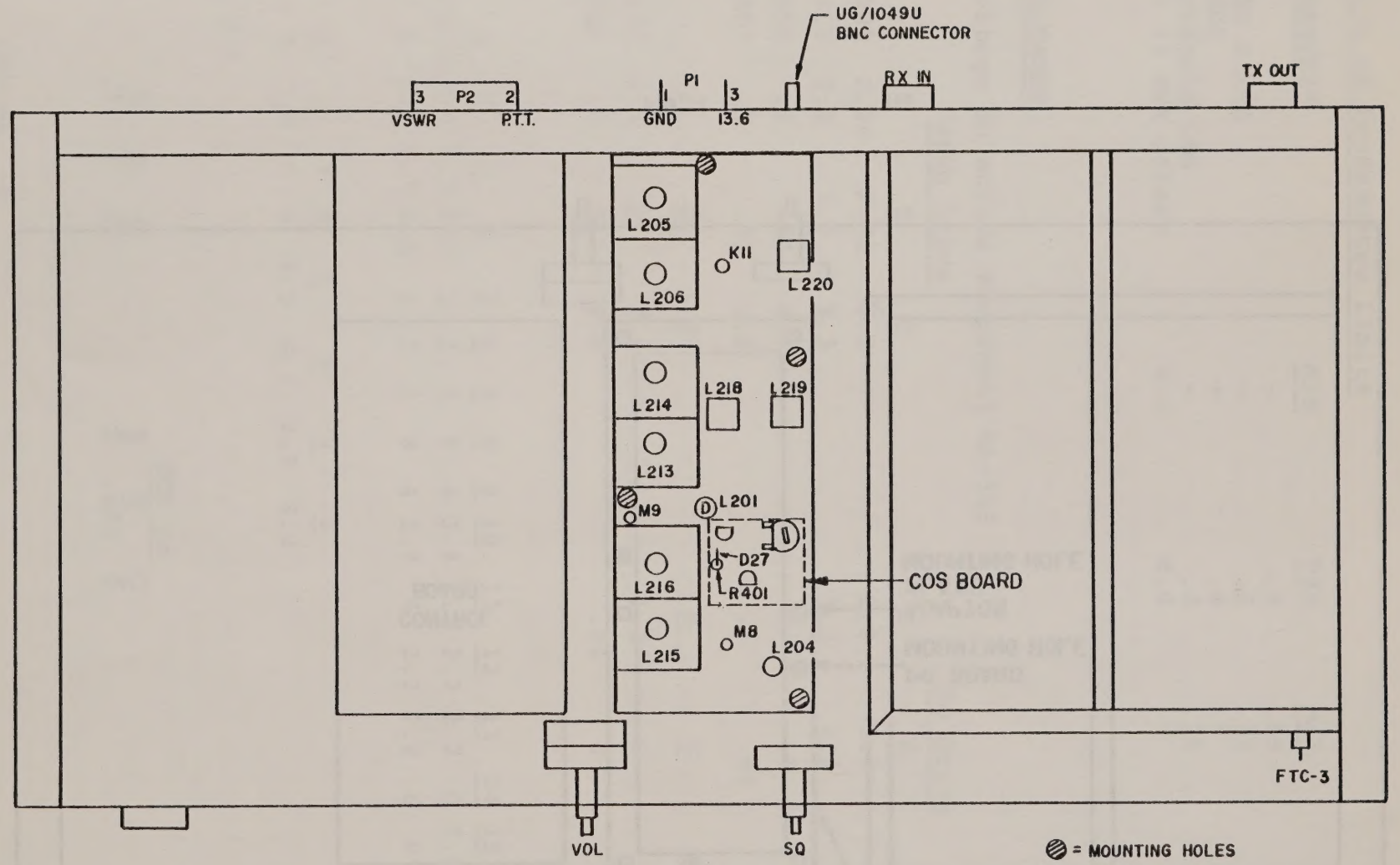
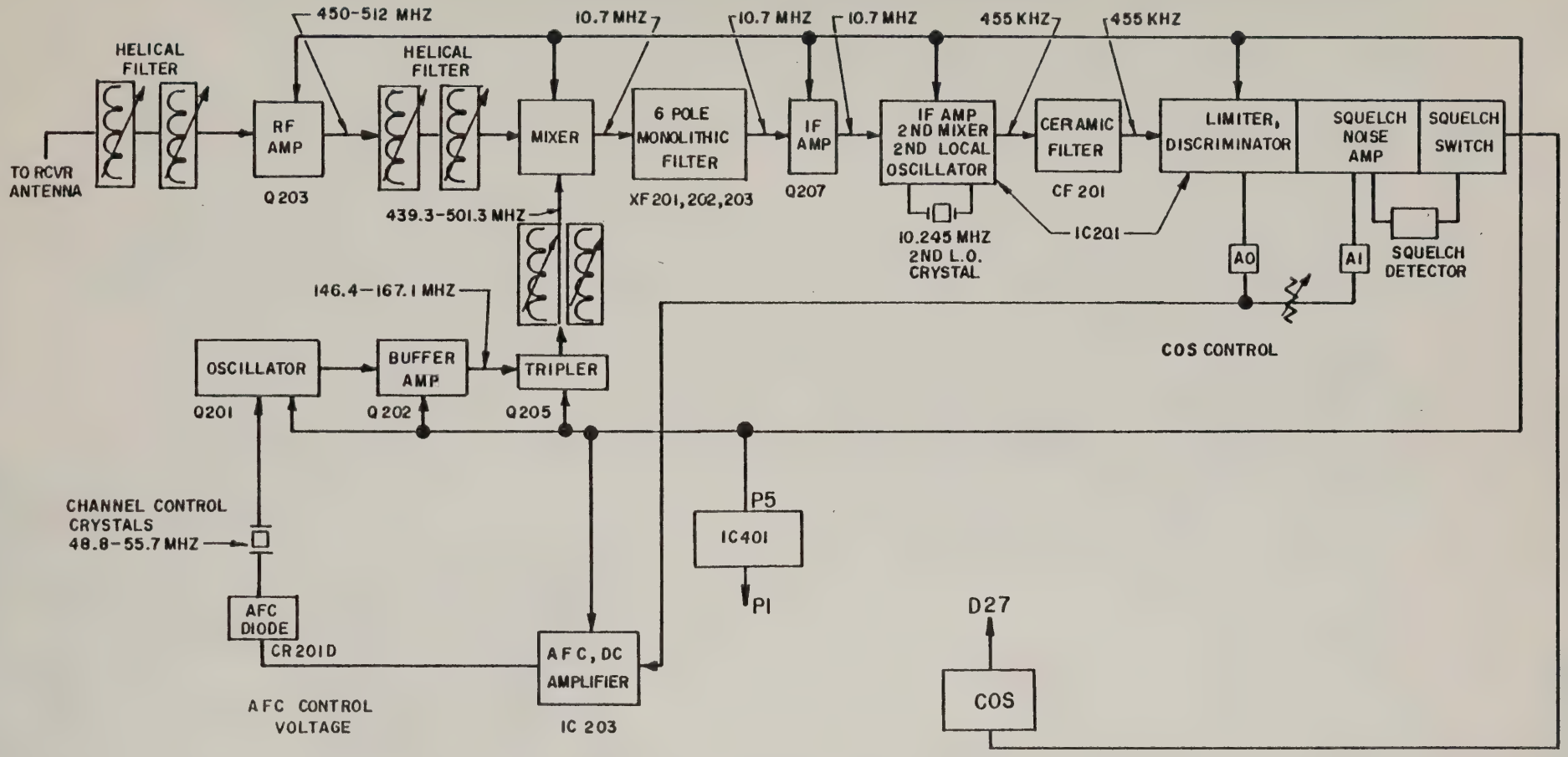


FIG 2

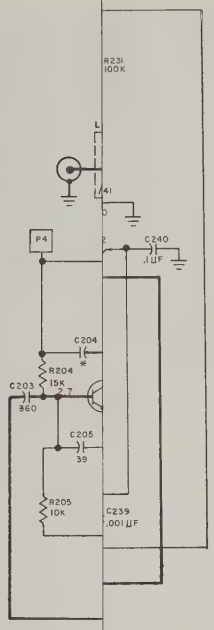
TUNING POINTS

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	RELEASE R-546		



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE	APPROVAL	DATE	Regency® COMMUNICATIONS INC. SATELLITE BEACH, FLORIDA 32937
		FRACT. ± DEC. .XX± .XXX± ANG. ±	DRAWN CMC	4-15-81	
			CHECKED		
	MCCU15RA, B		DFTG. SUPV.		BLOCK DIAGRAM RECEIVER
	MCCU01RA, B	MATERIAL	ENGR.		
	MCCU01A, B				SIZE A PART NUMBER 104-366 REV A
	MCCU04A, B	FINISH			
NEXT ASSY	USED ON				SCALE ~ SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRWG			

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	RELEASE R-540 SJR		



VOLTAGES ARE IN RED
(*) UNSQUELCHED,
COS ON

NOTES

1. ALL CAPACITOR VALUES NOT SPECIFIED OTHERWISE ARE PICO-FARAD.
2. ALL RESISTOR VALUES NOT SPECIFIED OTHERWISE ARE OHMS, ¼ WATT
3. PARTS MARKED WITH (*) ARE VARIABLE WITH MODEL — (SEE PARTS VARIABLE CHART).
4. PART NUMBERS INDICATE LOCATION:
   - 0-99 CHASSIS MOUNTED PARTS.
   - 100-199 P.A. DECK BOARD
   - 200-299 RECEIVER SECTION (MAIN BOARD).
   - 300-399 TRANSMITTER SECTION (MAIN BOARD).
   - 400-499 CONTROL PANEL BOARD.
5. DENOTES PIN LOCATED ON P.C. BOARD.
   DENOTES CIRCUIT TIE POINT.
   JU DENOTES SOLDERED IN JUMPERS.
   JU DENOTES HARDWIRE JUMPERS-USER SELECTED
   JO DENOTES PLUGGED IN JUMPERS (OPTIONS).
   ———— DENOTES BOARD BOUNDARIES
   — — — — — DENOTES OPTION VARIATIONS.
6. THIS SCHEMATIC IS USED IN CONJUNCTION WITH P.C. BOARD 704-064 (MAIN BOARD). PARTS PLACEMENT 604-295 (MAIN BOARD), P.C. BOARD COS 304-327, PARTS PLACEMENT COS 304-328, ARTWORK COS 304-326.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACT DEC ANGLE .XX± ± .XXX±	APPROVALS	DATE
			DRAWN SJR	3-81
			CHECKED	
			QUALITY SUPV	
		MATERIAL	ENGR	
		FINISH		
	MA-335			
T ASSY	USED ON			
APPLICATION		DO NOT SCALE DWG		

Regency COMMUNICATIONS INC
SATELLITE BEACH, FLORIDA 32937

SCHEMATIC
MA-335 RECEIVER WITH COS

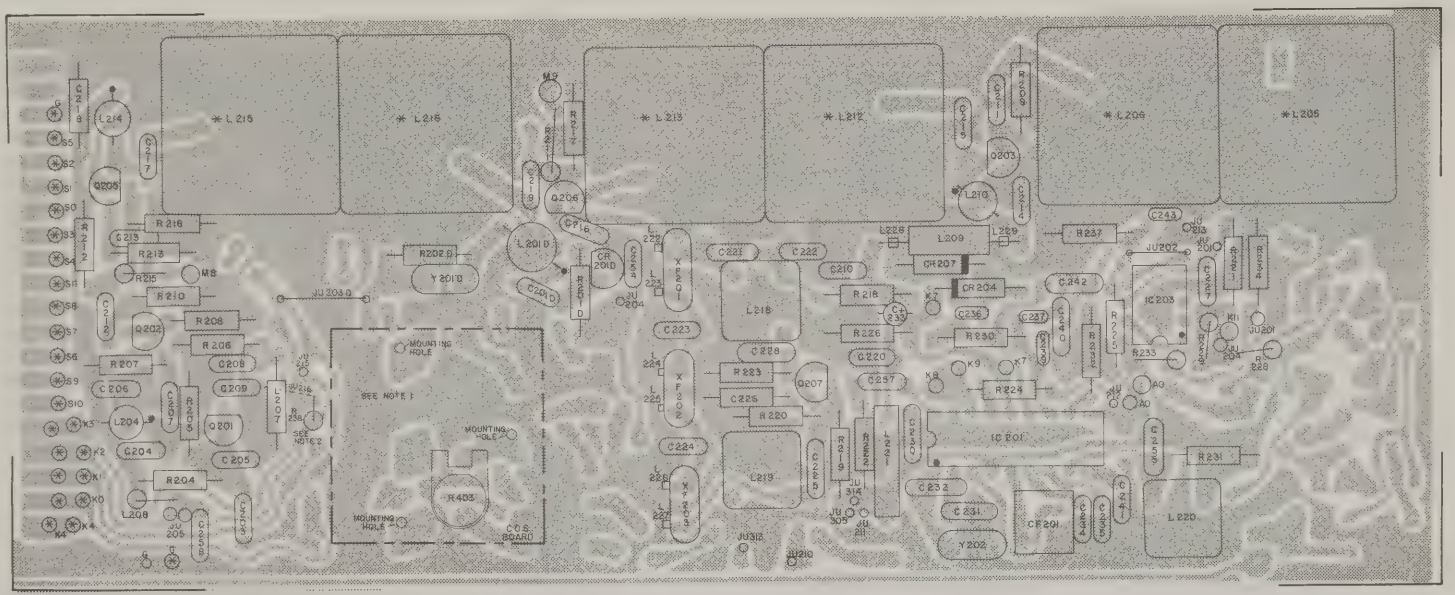
SIZE E | PART NUMBER 704-134 | REV A

SCALE | SHEET | OF

DWG. NO	SH	REV
604-295	1	A

REVISIONS

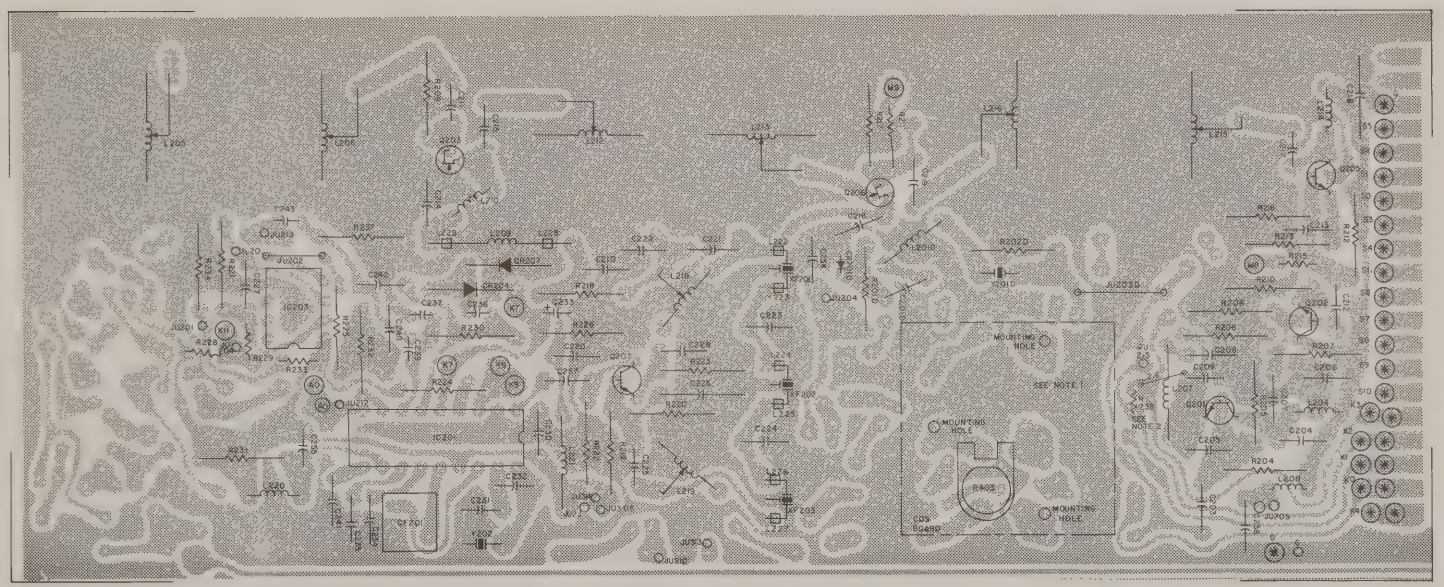
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	RELEASE R-540	4-29-81	R.L.S



DWG. NO	SH	REV
604-296	1	A

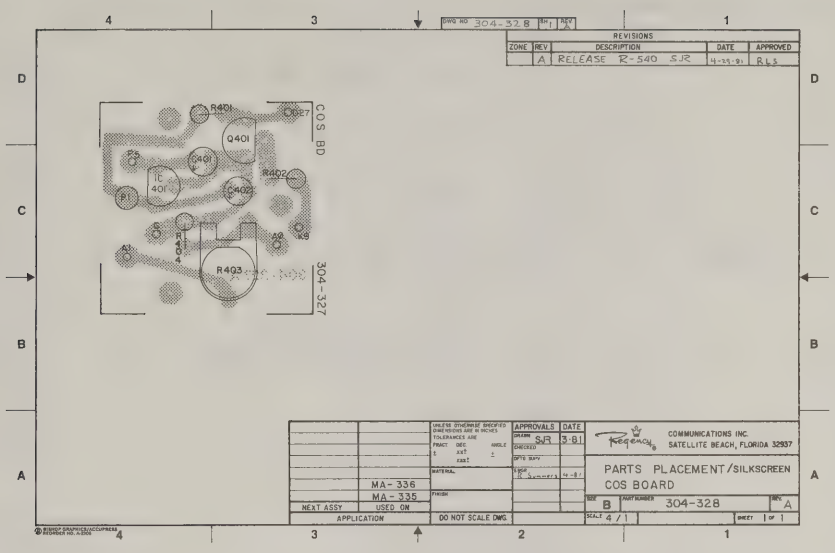
REVISIONS

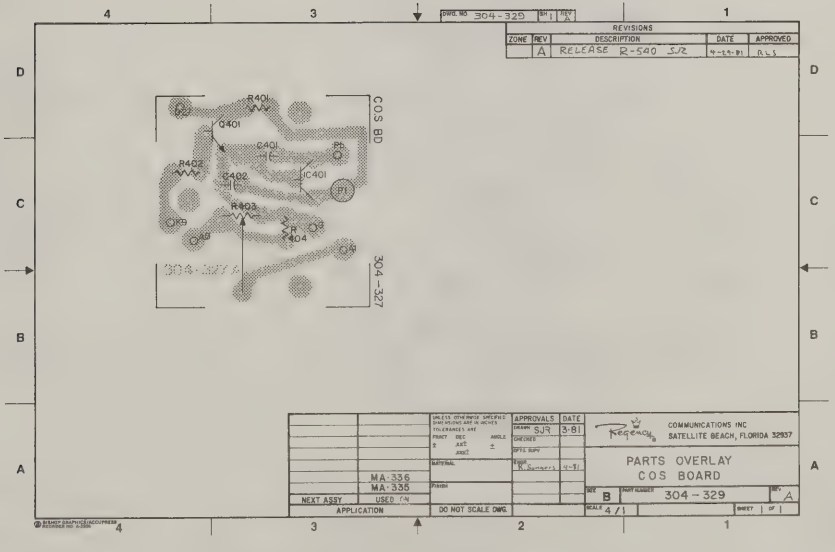
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASE R-540		



NOTES.
1. REFER TO PARTS PLACEMENT OF COS BOARD DWG. NO. 304-328
2 JU216 ON FOIL SIDE OF P.C. BOARD

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACT DEC ANGLE ± .XX ± .XXX ±	APPROVALS	DATE	COMMUNICATIONS INC SATELLITE BEACH, FLORIDA 32937
			DRAWN R.D.R	5-1-81	
			CHECKED		PARTS OVERLAY MA335 UHF RECEIVER WITH C.O.S.
		MATERIAL	APPD		
	MA-335	FINISH	SIZE D	PART NUMBER 604-296	REV A
NEXT ASSY	USED ON		SCALE 4/1		SHEET 1 OF 1
APPLICATION		DO NOT SCALE DWG.			


DWG NO 304-328
REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
A RELEASE R-540 SJR 4-29-81 RLS
R401
C827
Q401
C401
C402
IC 401
P1
R402
R403
R404
Q3
Q4
Q5
Q6
Q7
Q8
Q9
COS BD
304-327
APPROVALS DATE
DRAWN SJR 3-81
CHECKED
OPTICS SUPV
QUAL R. Summers 4-81
MATERIAL
FINISH
DO NOT SCALE DWG.
NEXT ASSY USED ON
MA-336
MA-335
APPLICATION
COMMUNICATIONS INC.
SATELLITE BEACH, FLORIDA 32937
PARTS PLACEMENT/SILKSCREEN
COS BOARD
DWG NO 304-328
REV A
SCALE 4/1
SHEET 1 OF 1


DWG NO 304-329
REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
A RELEASE R-540 SJR 4-29-81 RLS
R401
Q401
C401
C402
IC401
P1
R402
R403
R404
Q3
Q4
Q5
Q6
COS BD
304-327
APPROVALS DATE
DRAWN SJR 3-81
CHECKED
OPTICS SUPV
QUAL R. Summers 4-81
MATERIAL
FINISH
DO NOT SCALE DWG.
NEXT ASSY USED ON
MA-336
MA-335
APPLICATION
COMMUNICATIONS INC.
SATELLITE BEACH, FLORIDA 32937
PARTS OVERLAY
COS BOARD
DWG NO 304-329
REV A
SCALE 4/1
SHEET 1 OF 1

IX. PARTS LIST

RECEIVER BOARD

LOCATION	DESCRIPTION	PART NUMBER
RESISTORS (all resistors are ¼W 5% unless otherwise noted)		
R201D	10K carb comp ¼W 10%	4700-0103-042
R202D	4.7K	4704-0472-032
R203	not used	
R204	15K	4704-0153-032
R205	10K carb comp ¼W 10%	4700-0103-042
R206	220 ohm comp ¼W 10%	4700-0221-042
R207	10K comp ¼W 10%	4700-0103-042
R208	12K ohm	4704-0123-032
R209	100 ohm carb comp	4700-0101-042
R210	220 ohm comp ¼W 10%	4700-0221-042
R211	100K	4704-0104-032
R212	15K	4704-0153-032
R213	100 ohm carb comp	4700-0101-042
R214	not used	
R215	10K ohm	4704-0103-032
R216	1.2K ohm	4704-0122-032
R217	820	4700-0821-042
R218	1K	4704-0102-032
R219	120K	4704-0124-032
R220	15K	4704-0153-032
R221	1 meg	4704-0105-032
R222	3.3K	4704-0332-032
R223	180 ohm com p ¼W 10%	4700-0181-042
R224	47K	4704-0473-032
R225	100K	4704-0104-032
R226	180K	4704-0184-032
R227	not used	
R228	18K	4704-0183-032
R229	1K	4704-0102-032
R230	82K	4704-0823-032
R231	100K	4704-0104-032
R232	1 meg	4704-0105-032
R233	220K	4704-0224-032
R234	220K	4704-0224-032
R235	not used	
R236	not used	
R237	5.6K	4704-0562-032

CAPACITORS		
C201D	20pf CD 10 NPO 50V	1500-0200-650
C202	not used	
C203	360pf SM 50V LCQ-17	1506-0361-550
C204	22pf 10 NPO 50V	1500-0220-650

LOCATION	DESCRIPTION	PART NUMBER
C205	39pf CD NPO 500V	1500-0390-505
C206	.01mf CD +8-2 50V	1503-0103-007
C207	15pf CD 10 NPO 500V	1501-0150-001
C208	.001mf CD +8-2 50V	1503-0102-003
C209	68pf 5 NPO 50V RD 205	1524-0680-002
C210	.01mf CD +8-2 50V	1503-0103-007
C211	47pf 5 NPO 50V RD205	1524-0470-002
C212	.001mf CD +8-2 50V	1503-0102-003
C213	24pf CD 10 NPO 50V	1500-0240-650
C214	.001mf CD +8-2 50V	1503-0102-003
C215	5.6pf CD 10 NPO 500V	1500-0569-905
C216	24pf CD 10 NPO 50V	1500-0240-650
C217	82pf RD 5 NPO 50V RD205	1524-0820-002
C218	.01 Tub Cer 30 25V	1538-0103-804
C219	36pf CD 5 50V	1500-0360-550
C220	.001mf CD +8-2 50V	1503-0102-003
C221	24pf CD 10 NPO 50V	1500-0240-650
C222	.01mf CD +8-2 50V	1503-0103-007
C223	4.7pf CD NPO 500V	1500-0479-905
C224	4.7pf CD NPO 500V	1500-0479-905
C225	68pf RD 5 NPO 50V RD205	1524-0680-002
C226	150pf TM 10 50V NPO	1539-0151-601
C227	.1mf MC 12V BC-12	1502-0104-005
C228	.001mf +8-2 50V	1503-0102-003
C229	not used	
C230	.1mf MC 12V BC-12	1502-0104-005
C231	300pf SM 50V LCQ-17	1506-0301-550
C232	68pf RD 5 NPO 50V RD205	1524-0680-002
C233	1mf tant 20 15V	1515-0010-003
C234	.01mf CD +8-2 50V	1503-0103-007
C235	.1mf MC 12V BC-12	1502-0104-005
C236	0047mf MY 10 100V	1508-0472-610
C237	0047mf MY 10 100V	1508-0472-610
C238	not used	
C239, C243	.001mf MY 10 100V	1608-0102-610
C240	.1mf MC 12V BC-12	1502-0104-005
C241	470pf CD 20 50V Z5F	1523-0471-002
C242	100pf SM 5 50V LCQ-17	1506-0101-550
C244-C253	not used	
C254	.001mf +8-2 50V	1503-0102-003
C255	75pf RD 5 NPO 50V RD205	1524-0750-002
C256	not used	
C257	6.8pf CD 10 NPO 500V	1500-0689-905
C258	.001mf +8-2 50V	1503-0102-003
COILS		
L201D	coil rf var	1800-3191-406
L202	not used	
L203	not used	
L204	coil rf var	1800-5100-521
L205	coil rf var (pink)	1800-5129-101
L206	coil rf var (orange)	1800-5129-102

LOCATION	DESCRIPTION	PART NUMBER
L207	choke rf .47uhy A rco	1802-0478-008
L208	choke rf 22uhy	1802-0220-008
L209	choke rf 15uhy Wilco	1802-0150-004
L210	choke rf	1800-5100-522
L211	not used	
L212	coil rf var (green)	1800-5129-103
L213	coil rf var (orange)	1800-5129-102
L214	choke	1800-5100-523
L215	coil rf var (yellow)	1800-5129-104
L216	coil rf var (orange)	1800-5129-102
L217	not used	
L218	coil 10.7IF shielded	1800-3248-001
L219	coil 10.7IF shielded	1800-3248-001
L220	coil quad det	1800-3218-800
L221	choke 1000uhy	1800-3409-201
L222	ferrite bead 56-590-65/4A	2502-0000-001
L223	ferrite bead 56-590-65/4A	2502-0000-001
L224	ferrite bead 56-590-65/4A	2502-0000-001
L225	ferrite bead 56-590-65/4A	2502-0000-001
L226	ferrite bead 56/590-65/4A	2502-0000-001
L227	ferrite bead 56/590-65/4A	2502-0000-001
L228	ferrite bead 56/590-65/4A	2502-0000-001
L229	ferrite bead 56/590-65/4A	2502-0000-001
TRANSISTORS		
Q201	SM-43065 NPN	4801-0000-100
Q202	Blue top SPS1476	4801-0000-003
Q203	FET U310	4811-3406-200
Q204	not used	
Q205	Blue top SPS1476	4801-0000-003
Q206	Junct Fet 2N5668	4811-0000-030
Q207	Blue Top SPS1476	4801-0000-003
DIODES		
CR201D	Diode varicap	4809-5420-600
CR202 - CR203	not used	
CR204, CR207	IN4148	4805-1241-200
CR205, CR206	not used	
INTEGRATED CIRCUITS		
IC201	IF Sub System	3130-6056-500
IC202	not used	
IC203	LM358N	3130-3167-909
FILTERS		
XF201	xtal filter 2P 10.7 MHz	2705-3232-200
XF202	crystal filter	2705-1306-600
XF203	xtal filter 2P 10.7 MHz	2705-3232-200
CF201	cer filter CFU-455D2	2700-3209-500
Y202	crystal 10.245 MHz	2301-3151-601

COS BOARD

LOCATION	DESCRIPTION	PART NUMBER
RESISTORS (All resistors are ¼W 5% unless otherwise noted.)		
R401	10K	4704-0103-032
R402	100K	4704-0104-032
R403	10K var	4751-0103-001
R404	4.7K	4704-0472-032
CAPACITORS		
C401	1mfd tant @ 15 VDC	1515-0010-003
C402	1mfd tant @ 15 VDC	1515-0010-003
TRANSISTORS		
Q401	NPN-SPS-952-2	4801-0000-016
INTEGRATED CIRCUITS		
IC401	8V Reg	3130-0000-014

VARIABLE PARTS FOR MCCU01RB (470-512 MHz)

LOCATION	DESCRIPTION	PART NUMBER
C204	20pf CD 10 NPO 500V	1500-0200-650
C207	27pf CD 10 NPO 50V	1500-0270-650
L205	coil rf var	1800-5129-105
L206	coil rf var	1800-5129-106
L212	coil rf var	1800-5129-107
L213	coil rf var	1800-5129-106
L215	coil rf var	1800-5129-108
L216	coil rf var	1800-5129-109